

■ Operating and installation instructions

REMKO CLK series

Automatic oil/gas heaters

CLK 30, CLK 50, CLK 70, CLK 120, CLK 150



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Carefully read this original Operating Manual prior to commissioning/using the units.

This manual is an integral part of the unit and must always be kept in the vicinity of the installation location or on the unit itself.

Subject to modifications. No liability accepted for errors or misprints!

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Safety notes

Always observe the respective local building code and fire prevention guidelines as well as the guidelines of the accident prevention and insurance associations when using the units.

The units have been subjected to extensive material, functional and quality inspections prior to delivery. However, dangers can arise from the units if they are used improperly or not as intended by untrained personnel!

Please observe the following notes:

- The units may only be operated by persons that have been adequately instructed in their operation
- The units must be installed and operated in such a way that personnel are not endangered by exhaust gases and radiant heat, and no fires may occur
- The units must only be operated in areas where the units can be supplied with an adequate amount of air for combustion
- This unit can be used by children above the age of 8, as well as by people with impaired physical, sensory or mental capabilities or a lack of experience and knowledge if they are supervised or have received instruction in the safe operation of the unit, and if they understand the associated potential hazards. Children must never play with the unit. Cleaning and user maintenance must not be carried out by unsupervised children
- Without exhaust gas system, the units may only be operated in well ventilated spaces. Personnel must not remain in the installation area

Appropriate prohibition signs must be displayed at the entrances!

- Portable fuel containers must only be set up and used in observance of the technical rules for combustible liquids "TRbF 20"
- Only set the units down on a steady, level and non-combustible base
- The units must not be installed or operated in potentially flammable or explosive environments
- The units must not be installed or operated in atmospheres containing oil, sulphur or salt
- A safety zone of 1.5 m must be maintained around the units, including to non-combustible items
- The protective grille of the intake must always be kept free of dirt and loose objects
- Never insert foreign objects into the unit
- The units may not be exposed to direct jets of water. such as a **high-pressure cleaner** etc.
- All electrical cables for the units must be protected against damage (e.g. by animals etc.)
- Safety devices must not be bypassed or disabled
- The power plug must be pulled out of the mains socket before maintenance and repair work

- Unattended unit operation is only permitted with a thermostatic control

- The unit must always be left in a safe condition



NOTE

Only type-approved forced-air oil burners in WLE design per DIN EN 298 and DIN EN 267 (oil)/DIN EN 676 (gas) should be used.



CAUTION

If there is a gas leak, immediately close the shut-off valve to the gas supply system, switch off the gas heater, unplug the power plug, open windows/doors for ventilation and seek the cause of the gas leak in order to neutralise this. Do not use the unit again before the gas leak has been eliminated!

Unit description

The units are portable, directly fired fan-assisted heaters (WLE) with heat exchanger and exhaust gas connections exclusively for commercial applications.

The units can be directly fired with EL heating oil, diesel fuel or liquid gas.

The units can be operated with or without exhaust gas pipe. They are designed to be portable and for fully automatic operation.

The units are to be exclusively operated with separate type-approved forced-air burners.

The units are equipped with a noise-optimised and low-maintenance, high performance axial fan, a room thermostat receptacle and a power cable with protective contact plug.

In the case of units supplied ex works with blower oil burners, the units are equipped as standard with a drum fitting and electrical oil preheating.

- **Up to CLK 70:** Nozzle preheater in the burner (REMKO Multiflex also available as optional accessory)
- **From CLK 120:** REMKO Multiflex oil preheating

The units conform to the fundamental health and safety requirements of the appropriate EU stipulations, and are simple to operate.

CAUTION

The units may never be disconnected from the mains prior to the completion of the follow-up cooling phase (except in emergencies).

Locations at which units are used

As mobile, directly fired fan-assisted heaters, the units deliver instant heat. They are designed exclusively for commercial use.

The units may be used among other things for the following:

- Spot heating of outdoor workplaces
- Drying newly completed buildings
- Spot heating workplaces in open, non-flammable manufacturing facilities and halls
- Temporarily heating enclosed and open spaces
- De-icing machines, vehicles and non-combustible warehoused goods
- Maintaining the temperature of frost-sensitive goods
- Heating, ventilating or frost protection of lightweight structures
- Heating, ventilating or frost protection of tents
- Heating or frost protection in garden/agricultural outbuildings

Operating sequence

If the units are set to heating mode, then the forced-air burner starts automatically.

After the burner has run for a short time the temperature controller "TR" switches the supply air fan on automatically. Warm air is blown out.

When operating with a room thermostat, this process is repeated automatically depending on the heating requirement.

The temperature monitor "TW" monitors the internal temperature of the unit.

After switching off the units via the operating switch or the room thermostats the supply air fan runs to cool the combustion chamber with the heat exchanger for a certain time and then switches off. This process may be repeated several times.

Monitoring of the unit

The safety devices of the devices and the burner control unit (component of the blower burner) are used to perform all functions of the units fully automatically and to monitor their safety.

In the event of malfunctions or if the flame is extinguished, the automatic burner switches the units off.

The indicator lights on the control panel and the burner lamp on the burner control unit light up. Before restarting the device, the automatic burner must be manually released. To do this, press the external reset button on the control panel or the reset button on the automatic burner unit.

The temperature controller (TR) controls fan operation.

The temperature monitor (TW) limits or regulates the device temperature during heating operation.

The safety temperature limiter (STB) interrupts the heating function in case of extreme overheating or a failure or malfunction of the TW. The STB can only be manually reset after the units have cooled down.

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Specifications for fan-assisted heaters

When using the units the respective applicable guidelines must always be observed.

- Combustion plant order (FeuVo) for the individual federal states
- Workplace directives ASR 5
- Workplace regulations §§ 5 and 14
- Ordinance for implementation of Federal Emissions Control Regulations (BImSchG) and the subsequently issued legislation (ENEG)

Combustion air supply

There is good natural ventilation and aeration for example if:

1. the room volume in m^3 is at least 30 times the nominal heating capacity in kW of all of the units operating in the space and if the natural change of air is provided by windows and doors, or
2. constantly open ventilation openings are present for incoming and exhaust air in the vicinity of the ceiling and floor, whose size in m^2 is at least 0.003 times the nominal heating capacity in kW of all of the units operating in the space.

Installation instructions

The safety regulations of the accident prevention and insurance associations, the respective regional building regulations and the combustion appliances regulations apply to the operation of the units.



NOTE

Overpressure and underpressure in the installation area should be avoided as this will inevitably lead to combustion-related faults.

- Make sure that there is an adequate fresh air supply appropriate to the respective forced-air burner capacity (see name plate)

Outdoor installation

- Operation of the units must not present a hazard or unreasonable discomfort
- The unit operator must ensure that it is impossible for unauthorised persons to manipulate either the unit or the power supply
- Precipitation such as rain or snow can be sucked in through the supply air fan. For this reason suitable weather protection should be provided



NOTE

The burner setting must be checked after every change of location and adapted to the new environmental conditions and atmospheric conditions if necessary.

- The units must not be used below ground level, e.g. in basements, without suitable gas monitoring equipment
- The fuel supply must be installed in accordance with DIN 4755 for oil-fired fan-assisted heaters, DVGW Code of Practice G 600 for gas-fired warm air heaters and TRF for liquid gas
- The gas connection/unit operation must take place exclusively on the basis of the accident prevention regulation DGUV 79, "Use of liquid gas", as well as the respective local construction and fire prevention regulations.

Installation in enclosed, well ventilated areas without exhaust gas connection

- Reliable extraction of the combustion gases must be guaranteed in all cases in order to exclude impermissible contamination of the room air with hazardous substances
- Fresh air is fed from below**
Exhaust gases are routed upwards

Room heating

- The units may only be operated for room heating with a room thermostat (accessory)
- The fresh air supply required for trouble-free combustion must be ensured. It is practical to have the fresh air supply provided by windows and doors or through appropriately dimensioned openings in the outside wall

CAUTION

The units must only be installed in well ventilated spaces and not in living areas or similar recreational areas.

NOTE

For optimum operation the units should not be operated above an ambient temperature of 25 °C.

CAUTION

For use in public buildings, national regulations must be observed.

Safety distances

- In order to guarantee safe operation and maintenance of the units, 1.5 m safety distance should be maintained around the unit
- Flooring and ceilings must be fire retardant
- Intake and outlet diameters must not be narrowed or blocked with foreign objects

Safe condition

- The units must always be left a safe condition
- For this purpose, the operating switch must be switched to position "0" (Off) and the fuel supply must be shut off as a minimum
- With extended periods at a standstill, the units must be disconnected from the mains supply

Electrical wiring

- The units are operated with 230 V/50 Hz alternating current
- The electrical connection is made using a built-in mains cable with earthed safety plug



NOTE

The electrical connection for the units must be made at a separate feed point with a residual current device in accordance with VDE 0100, Section 55.

- Extensions to the cable may only be carried out by authorised electricians, subject to the length of the cable, connected load of the unit and taking into consideration how the unit is used at its location

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Safety equipment

Safety temperature limiter (STB)

The heating function is permanently interrupted by the safety temperature limiter (STB) in the event of the units overheating or malfunctioning.

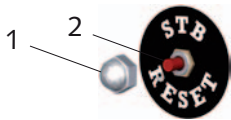
A manual reset of the STB can only be implemented after the units have cooled down.

CAUTION

If the safety temperature limiter has been triggered, the cause of the malfunction must be identified and rectified before a reset is performed.

The STB is reset by actuating the reset key 2.

1. Unscrew the protective cap 1.



2. Carefully press in the reset key 2 with a suitable tool.
3. Screw the protective cap 1 back on again.

NOTE

In order to prevent a renewed exceedance of the triggering temperature the operating conditions of the unit should be checked before resetting the STB.

CAUTION

Safety devices may be neither bypassed nor disabled.

Regulating devices

The temperature sensor of the controller is self-monitoring.

The probes are cold-resistant down to -20 °C.



At temperatures below -20 °C the controller current flow will be interrupted, if the temperature rises above -20 °C the current flow will be released again.

In the event of the probe or the capillary tube being damaged, as well as if an overtemperature of ca. 220 °C is reached, the filling medium will be emptied and the safety device is permanently triggered.

Resetting is no longer possible. The controller is no longer fully functional and must be replaced.

Only "**REMKO original replacement parts**" must be used when replacing safety devices.

- Ensure that the device is fitted properly
- The capillary tubes must not be kinked or bent in the immediate vicinity of the soldering points
- The capillary tubes must not be damaged or kinked during installation
- The probes must only be fitted at the fastening points provided by the factory
- The probes must always be free of dust and dirt in order to be sure of their correct functioning

The units have the following control or safety equipment:

Temperature controller (TR)

The temperature controller controls the switching on and off of the recirculating fan. The switch point is set via the "Scale 21 - 60°" controller in the switching cabinet. Setpoint value approx. 35 - 40 °C.

Temperature monitor (TW)

The temperature monitor limits the unit or outlet temperature in heating mode via the burner. The switch point is set via the "Scale 34 - 110°" controller in the switching cabinet. Setpoint value approx. 80 - 85 °C.

Safety temperature limiter (STB)

The unit is permanently switched off by the safety temperature limiter (STB) in the event of the unit overheating or a temperature monitor malfunction. Manual resetting is required.

Automatic burner

The unit is permanently switched off by the automatic burner through the optical flame monitoring in the event of irregularities in the combustion, the flame extinguishing, fuel deficiencies etc. Manual resetting is required.

Exhaust gas ducting

It is also possible to operate the units outdoors or in open spaces without exhaust ducting. However, we recommend fitting a 1m exhaust gas duct with a rain hood on top (example 2), in order to exclude the ingress of rainwater and dirt.

If the units are used for room heating then the combustion gases must be routed away, to the outside if necessary.

- The exhaust gas ducting must be designed so that the thermal lift of the exhaust gases is guaranteed at all times
- The exhaust gas ducting must be designed so that no counter-pressure can be generated
- Fault-free operation is guaranteed if the exhaust gas ducting is fitted in a rising arrangement and with a vertical end pipe
- The exhaust gas routing should end at least above the height of the eaves but ideally above the height of the ridge, in order to prevent any counter-pressure being caused by poor weather conditions (e.g. wind)
- The minimum distance of 0.6 m to combustible parts must be met
- Exhaust gas ducting parts and fastening materials are available as accessories

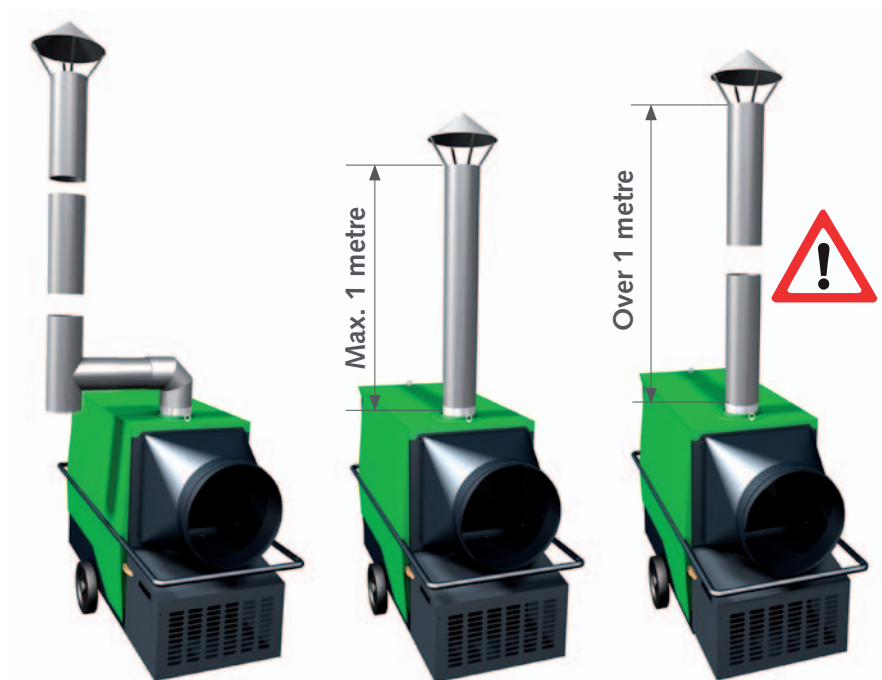
- All parts of the exhaust gas ducting must be reliably fastened. Its diameter must not be smaller than the outlet nozzle of the unit

⚠ CAUTION

There must be no counter pressure arising from incorrect installation of the exhaust gas ducting under any circumstances.

Notes for implementing the 1st. BImSchV

Units that are not expected to be operated for longer than 3 months in the same location are not subject to any approvals or monitoring as per the 1st. BImSchV.



Example 1

Operation with extended exhaust gas ducting

Condensate trap required

Example 2

Operation without extended exhaust gas ducting

Max. 1 metre

Example 3

Impermissible layout

In order to avoid the combustion chamber being damaged due to condensation of moisture (condensate) in example 3, make sure that the exhaust gas ducting is correctly installed with a condensate trap as shown in example 1.

💡 NOTE

After installing an exhaust gas system the settings on the burner should be adapted to suit the new conditions.

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Before commissioning

The units should be checked for visible defects on the operating and safety devices as well as proper installation and correct electrical connections before commissioning.

It is essential that the following points be observed:

- Set up the units in a stable position
- Ensure there is sufficient supply of combustion air
- Check that the inlet and outlet are free
- Prevent overpressure or underpressure in the installation area
- Ensure that there is sufficient fuel supply and that it complies with the respective local regulations
- Only use clean heating oil, diesel fuel, liquid gas or biofuel that complies with the technical specifications
- The replacement of gas cylinders must take place in an environment without ignition sources

Fuel supply

All common gas cylinder sizes are permitted for the gas supply. However, a gas cylinder with at least 11kg filling weight is recommended. For longer operation and nominal heat outputs above 50kW, it is recommended that the gas be drawn from several gas cylinders in parallel. (Multi-

cylinder accessories set)

- The connection hose must not be subject to torsional forces!
- The fan-assisted heater must not be pointed in the direction of the fuel supply!

Paraffin formation with low outside temperatures

Even at low outside temperatures it is necessary to ensure that there is an adequate supply of heating oil that is capable of flowing.

- Paraffin formation can start from temperatures below 5 °C
- To avoid this appropriate preventative measures must be implemented
e.g. **Winter-proof EL heating oil or winter Diesel, heated oil tank, insulated oil lines etc.**
- Note that fault-free operation of the Multiflex oil pre-heating can only be guaranteed if the unit has been supplied with electrical power for a long period of time before starting
- It is not possible to rectify paraffin separation that has already occurred with the heating. If paraffin has already formed it is necessary to clean out the complete fuel system

Air distribution

The units are equipped with a high performance axial fan. This fan is designed to specifically and effectively transport the heated air.

The distribution of the air is preferably implemented via ducting or special warm air or membrane hoses.

The possible lengths depend on the air-side resistances of the air ducts used.

- Use hot air hoses approved by us (accessories) exclusively
- Observe the air flow direction of the hoses with this!
The inner overlapping on the seams of the hot air hoses must point in the direction of the air flow
- Make sure that the hose or ducting is securely fastened to the unit outlet nozzle and any connection pieces that may be being used
- Only suitable air distributors or air distributors approved by ourselves should be used for the air distribution

⚠ CAUTION

The operability of flexible fuel lines must be verified according to local conditions. They must always be protected against damage such as from forklifts, animals, etc.



NOTE

After the respective local requirements have been satisfied and correct unit installation has taken place, the forced-air burner must be checked by an authorised specialist for its exhaust gas values, and adjusted if necessary. Observe the operating manual for the burner. Refer to the respective manual for setting values!



NOTE

The burner setting must be checked after every change of location and adapted to the new environmental conditions and atmospheric conditions if necessary.



NOTE

The hot air hoses must only be used in fully extended form and without any constrictions.

Commissioning

- There should be no kinks or bends in the hose lines in order to prevent hot-spots forming. Membrane hoses must not be twisted
- Enclosed spaces being heated via hoses must not present any overpressure
- The forced-air burner can be switched off briefly during operation by the temperature monitor (TW) in the event of increased intake temperatures or resistance at the unit's outlet.
After the temperature drops again the burner restarts automatically!



NOTE

Cycled operation of the forced-air burner with run times under 5 min. must in any event be avoided.

- If the cycle intervals are too short the length and layout of the hot air ducting should be checked



CAUTION

If a build-up of heat should occur then the heating operation will be interrupted by the STB permanently!



NOTE

Air feeds on the intake side must always be implemented by means of non-distorting hoses/ducts (no unstable hoses).

A person, who has been adequately trained in the handling of the units, must be tasked with operation and monitoring of the units.

Connecting the units to the electrical power supply

1. Move the operating switch to the "0" (off) position.



2. Connect the power plug to a properly installed and appropriately safeguarded mains socket.
230 V/50 Hz



CAUTION

All cable extensions must only be used in fully un-reeled or reeled off condition.

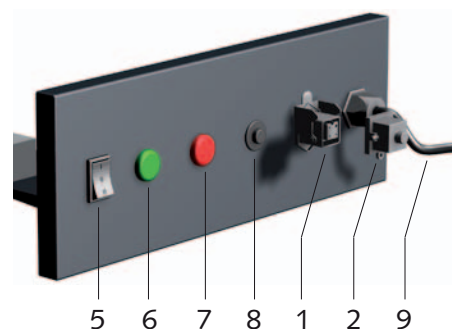
3. Open all of the oil supply shut-off devices.
With the initial commissioning, air in the oil lines can lead to a fault shut-down of the burner.



NOTE

*Cold start
With the CLK 30 to CLK 70 units fitted ex works with a blower oil burner, a temperature-dependent delayed device start takes place due to the preheating of the nozzle block.*

Control panel

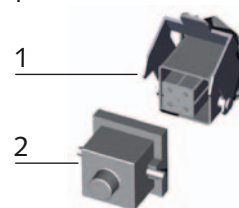


- 1 = Thermostat receptacle
- 2 = Strapping plug
- 5 = Operating switch
- 6 = Indicator light "GREEN" "Operation"
- 7 = Indicator light "RED" "Burner fault"
- 8 = Reset button "Burner"
- 9 = Mains cable with plug

Heating without room thermostat

The units are operating in permanent operating mode.

1. Connect the strapping plug supplied 2 with the thermostat receptacle 1 on the unit.



2. Move the operating switch to the "I" (Heating) position.



CAUTION

Never interrupt the mains connection (except in emergencies) prior to the completion of the follow-up cooling phase.

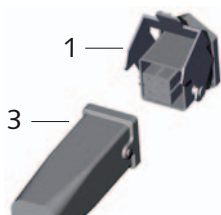
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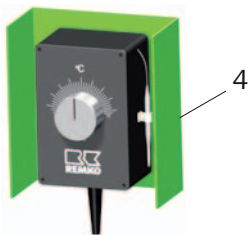
Heating with room thermostat (Accessories)

The units operate fully automatically and according to the room temperature.

1. Pull out the strapping plug 2.
2. Connect the plug 3 of the room thermostat 4 with the thermostat socket 1 on the unit.



3. Place the room thermostat 4 at a suitable location in the room. The thermostat sensor must not be located directly in the warm air flow and must not be placed directly on a cold floor.
4. Set the desired temperature on the room thermostat 4.



5. Move the operating switch to the "I" (Heating) position.



The unit starts automatically after a brief burner pre-ventilation if heat is required and then runs fully automatically.

Ventilation

In this switch position, the supply air fan runs permanently. The units can be used for air recirculation or ventilation purposes.

1. Move the operating switch to the "II" (Ventilate) position.



Thermostatic regulation and heating operation are not possible in this operating mode.



NOTE

Indicator light "Operation"

The indicator light signals the "Heating" operating mode.

There is no display in the "Ventilate" operating mode or with the room thermostat switched off and when the STB has been triggered.

Shutdown

1. Move the operating switch to the "0" (off) position.



2. Shut off fuel supply.



3. With longer periods of inactivity, the units from the mains power supply.



The supply air fan runs on to cool the combustion chamber and the heat exchanger and only switches off after the cooling down phase is complete.

The fan can switch on and run several times before the final shutdown.



CAUTION

Never interrupt the power supply prior to the completion of the follow-up cooling phase.

There is no guarantee entitlement in case of damage to the units due to overheating.



NOTE

In the case of longer periods of inactivity or if the units are in storage, ensure that the fuel tank is always filled with heating oil or diesel.

Care and maintenance

Regular care and observation of some basic requirements, once yearly or after extended times at a standstill, will ensure trouble-free operation and a long service life of the units.

⚠ CAUTION

Before undertaking any work on the units, the power plug must be removed from the mains socket.

💡 NOTE

Adjustment and maintenance work may only be carried out by authorised and qualified technicians.

- Keep the units free of dust and other deposits
- Only clean the units with a dry or moistened cloth
- Never subject to direct jets of water
e.g. pressure washers etc.
- Never use abrasive or solvent-based cleaners
- Use only suitable cleaners, even for heavy contamination
- Use only clean EL heating oil or diesel fuel
Beware of paraffin formation!
- Check the fuel filter(s) for contamination at regular intervals. Replace contaminated filter if necessary
- Check the units for mechanical damage and have defective parts properly replaced
- Check the fan blades and combustion chamber with heat exchanger for contamination at regular intervals and clean these if necessary
- Check the on-site oil tank regularly for contamination, condensate water, foreign bodies and clean if necessary

- Check that the safety devices are operating correctly at regular intervals
- Keep the probes for the safety devices free of dust and dirt
- Have the exhaust gas values for the forced-air burners checked by authorised specialists at regular intervals.
For safety reasons we recommend the conclusion of a maintenance contract
- Observe maintenance and care intervals
- In the event of defects that endanger the operational safety of the units, operation of the units must be discontinued immediately and the supervisor informed!

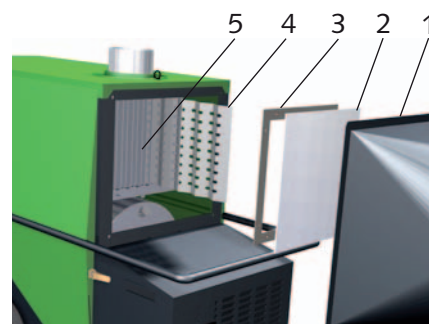
Cleaning tasks

The units, including the heat exchanger, combustion chamber and forced-air burner must be cleared of dust and dirt after every heating period, or possibly earlier depending on the operating conditions.

Wearing parts, such as exhaust gas suppressors, seals, oil filter inserts and oil nozzles for example, should be checked and replaced if necessary.

Cleaning the heat exchanger

1. Set the operating switch to the "0" position and remove the power plug from the mains socket.
2. Take off the exhaust hood 1 after removing the 4 fastening screws. Hot air hoses present need not necessarily be removed.
3. Remove the inspection cover 2 and withdraw the exhaust gas suppressors 4.
4. Clean the flues 5.
A special cleaning brush is available as an accessory with EDP no. 1103110.



5. Clean the exhaust gas suppressors or replace damaged exhaust gas suppressors.
6. Check the seal 3 for the inspection cover and replace any damaged seals.
7. Following maintenance work, refit all parts carefully in reverse order.

Please also observe the instructions on the next page.

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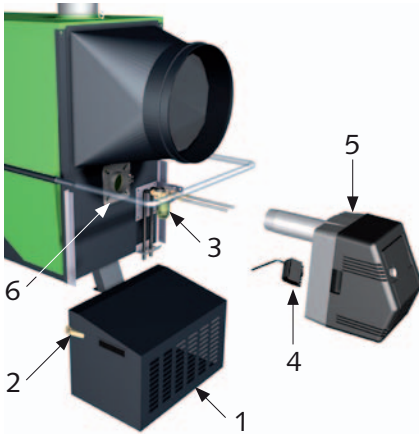


Inspection cover

- Always check that the seal is correctly seated in the inspection cover.
- When fitting the inspection cover ensure that the fastening nuts are tightened evenly. Unevenly tightened fixing nuts can result in leaks.

Cleaning the combustion chamber

1. Set the operating switch to the "0" position and remove the power plug from the mains socket.
2. Remove the burner cladding 1 after opening the two quick-release couplings 2.
3. Unscrew the fuel filter 3 including the fuel lines and take the plug 4 off the burner 5.



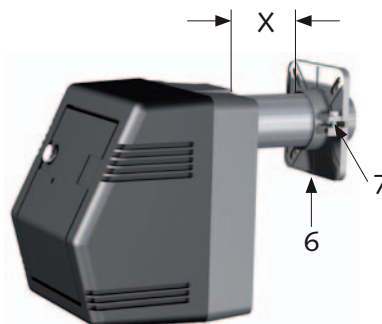
4. Loosen the 2 lower fastening screws on the burner flange 6.
4. Loosen the clamping screw 7 on the burner flange 6 and take out the burner by pulling towards the front.

5. Set down the burner and the fuel filter carefully beside the unit.
6. Remove the burner flange 6.
7. Take care not to damage the flange seals, as far as is possible.
Damaged flange seals can result in incorrect air induction.
8. Clean the combustion chamber through the burner opening with a vacuum cleaner. A special boiler cleaning set for the REMKO industrial vacuum cleaner is available as an accessory.

Installation of the burner flange and the burner

1. Check the flange seal and replace if necessary.
2. Fix the burner flange to the unit housing with the four fastening screws.
Note the "UP" sign!
3. Tighten the top 2 fastening screws firmly.
4. Gently tighten the lower 2 fastening screws with only light force so that the burner flange can still be pulled together.

Burner up to size 33: **X = 20 mm**
Burner from size 44: **X = 30 mm**



5. Slide the flame tube of the burner into the burner flange.
Note dimension X in the sketch!
6. Clamp the flame tube firmly into place with the clamping screw 7 whilst lifting the burner slightly (3° tilt).
7. Lastly, tighten the bottom 2 fastening screws firmly.
8. Remount the fuel filter insert and lines and check for leaks.
9. Re-fit burner cladding and fasten with the quick couplings.

Additional notes for maintenance of the unit

- All work must be carried out exclusively by authorised specialists with the appropriate equipment. A log should be created and kept safely by the operator



NOTE

The restrictions on exhaust gas losses per §10 of the ordinance on small furnace systems (1st. BImSchV) must be observed.

- It is essential that the forced-air burner is serviced and adjusted by authorised specialists



CAUTION

An electrical safety check must be carried out in accordance with VDE 0701 after any work on the units.

Troubleshooting

CAUTION

Before undertaking any work on the units, the power plug must be removed from the mains socket.

The unit does not start

1. Check power supply.
2. Move the operating switch to the "I" (Heating) position.
3. Check whether the "Operation" indicator light on the control panel is illuminated. It must light up in the "Heating" mode.



NOTE

The indicator light only indicates the "Heating" mode. There is no display in the "Ventilate" operating mode or with the room thermostat switched off and when the STB has been triggered.

4. Check the strapping connector or the room thermostat plug, if fitted, is seated properly and making good contact.
5. Check the setting of the room thermostat.
The temperature set must be higher than the current room temperature.
6. Check whether the safety temperature limiter (STB) has tripped.
To do so, remove the protective cap next to the control panel.
7. Before an STB reset ensure that the causes have been analysed and rectified.
The following causes are possible:

- The units were not able to cool down because the electrical connection was interrupted.
 - Too high an outlet temperature due to incorrectly implemented air ducting when operating with hoses.
 - Air inlets or outlets are not free or are inadequate.
8. Check whether the "Burner fault" indicator light on the control panel is illuminated. If this is the case, then reset the automatic burner.
 9. Move the operating switch to the "II" (Ventilate) position. If the supply air fan now starts up the fault may well be in the burner area.

Forced-air burner and power supply

1. Check the oil filter(s) for contamination. Replace contaminated oil filter(s).
2. Check whether the shut-off cock on the oil filter is open.
3. Check the fuel tank for sufficient fuel level.
4. Check the heating oil for paraffin separation.
Possible even from 5 °C!
5. Check the oil hoses for damage.
6. Check the safety devices' capillary tubes and probes for damage or contamination.
7. Use appropriate means to check that the temperature monitor (TW) is functioning properly.
8. Check the forced-air burner for possible damage to the nozzles, baffle plate, filter etc.

CAUTION

If the burner should carry out a fault shut-down once again after the start phase, then another reset should be carried out after a waiting period of 5 minutes has passed.

Further reset procedures must be prohibited as there is a danger of deflagration.

The supply air fan does not start

1. Check the fan can move freely.
2. Check the electrical cables on the supply air fan for damage.
3. Check the operating condenser of the fan.
It is located in the unit's switching cabinet.
4. Use appropriate means to check that the temperature controller (TR) is functioning properly.

CAUTION

Repair work on the electrical installation and on the burner must be performed exclusively by authorised specialists for safety reasons.

CAUTION

An electrical safety check must be carried out in accordance with VDE 0701 after any work on the units.

REMKO CLK SERIES

Intended use

The units are designed exclusively for heating and ventilation purposes in industrial or commercial use (not for living space heating in private use) on the basis of their structural design and equipment.

The units must only be operated by appropriately instructed personnel.

With non-observance of the manufacturer's specifications, the respective local legal requirements or after arbitrary alterations to the units, the manufacturer shall not be liable for resulting damages.

Customer service and guarantee

As a prerequisite for any guarantee claims to be considered, it is essential that the ordering party or their representative complete and return the **"Certificate of guarantee"** to REMKO GmbH & Co. KG at the time when the units are purchased and commissioned.

The units are tested several times to verify their correct function. However, if malfunctions should arise that cannot be remedied by the operator with the assistance of the troubleshooting section, please contact your specialist dealer or contractual partner.



Environmental protection and recycling

Disposal of packaging

When disposing of packaging material, please consider our environment.

Our units are carefully packed and delivered in stable transport packaging and, if applicable, on a wooden pallet.

The packaging materials are environmentally-friendly and can be recycled.

By recycling packaging materials, you make a valuable contribution to the reduction of waste and conservation of raw materials.

Therefore, only dispose of packaging material at appropriate collection points.

Disposal of the old unit

The manufacturing process for the units is subject to continuous quality control.

Only high-grade materials are processed, the majority of which are recyclable.

You also contribute to environmental protection by ensuring that your old equipment is only disposed of in an environment friendly manner.

Therefore, only bring the old unit to an authorised recycling business or to an appropriate collection point.



NOTE

Operation other than the types listed in this operating manual is prohibited.

Failing to observe this renders any manufacturer liability or guarantee claims void.



NOTE

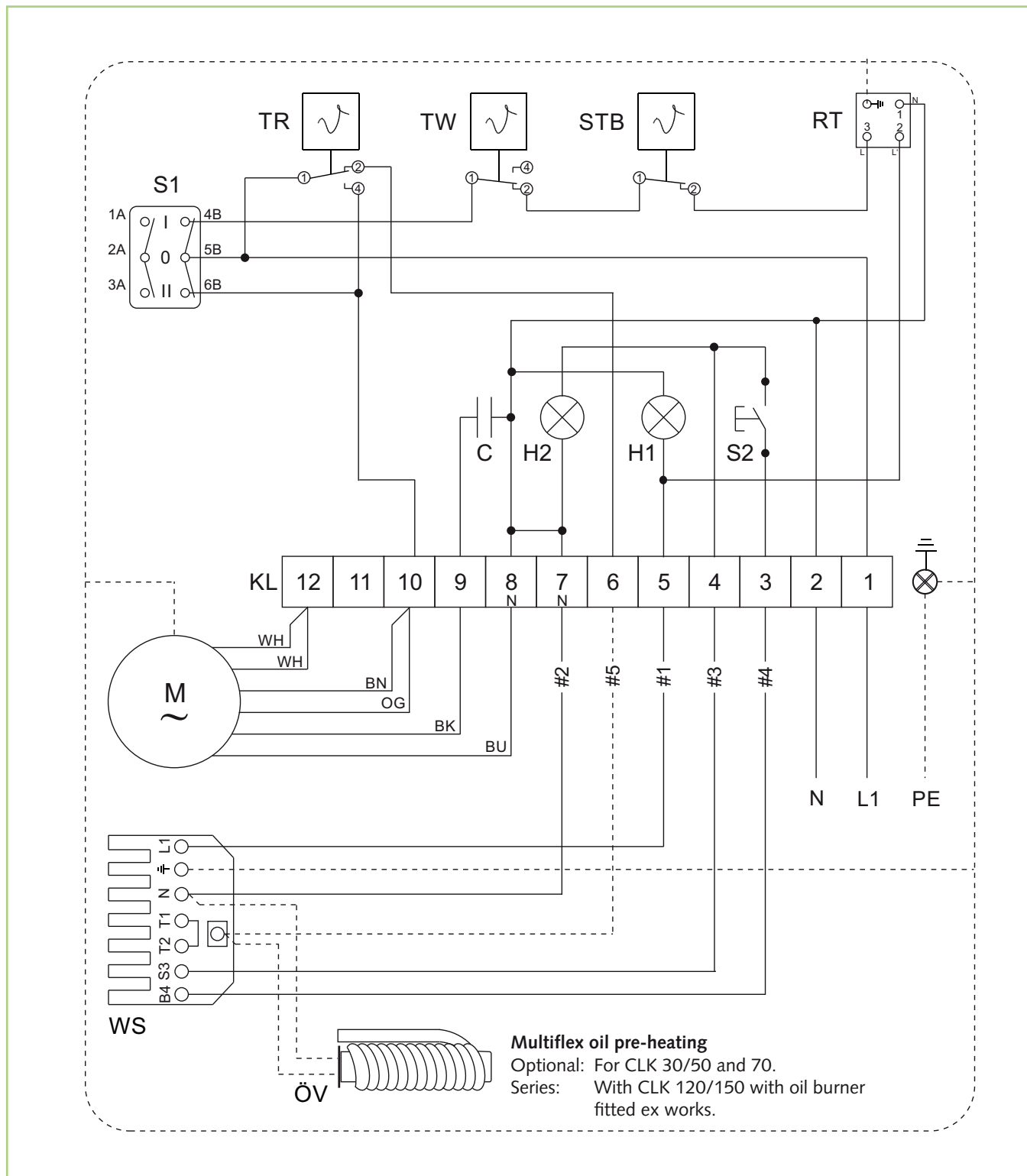
Adjustment and maintenance work may only be carried out by authorised and qualified technicians.



CAUTION

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or the use of this documentation
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written authorisation of
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is prohibited.*

Electrical wiring diagram



Legend:

- | | |
|--|--|
| C = Start-up capacitor | S2 = Reset button (burner) |
| H1 = Operating lamp (green) | STB = Safety temperature limiter |
| H2 = External burner fault lamp (red) | TR = Temperature controller |
| KL = Terminal block | TW = Temperature monitoring device |
| M = Fan motor | WS = Burner plug, 7-pin |
| RT = Thermostat socket | (only fitted with factory burner delivery) |
| S1 = Operating switch | ÖV = Multiflex oil pre-heating |

We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

REMKO CLK SERIES

Exploded view of the unit

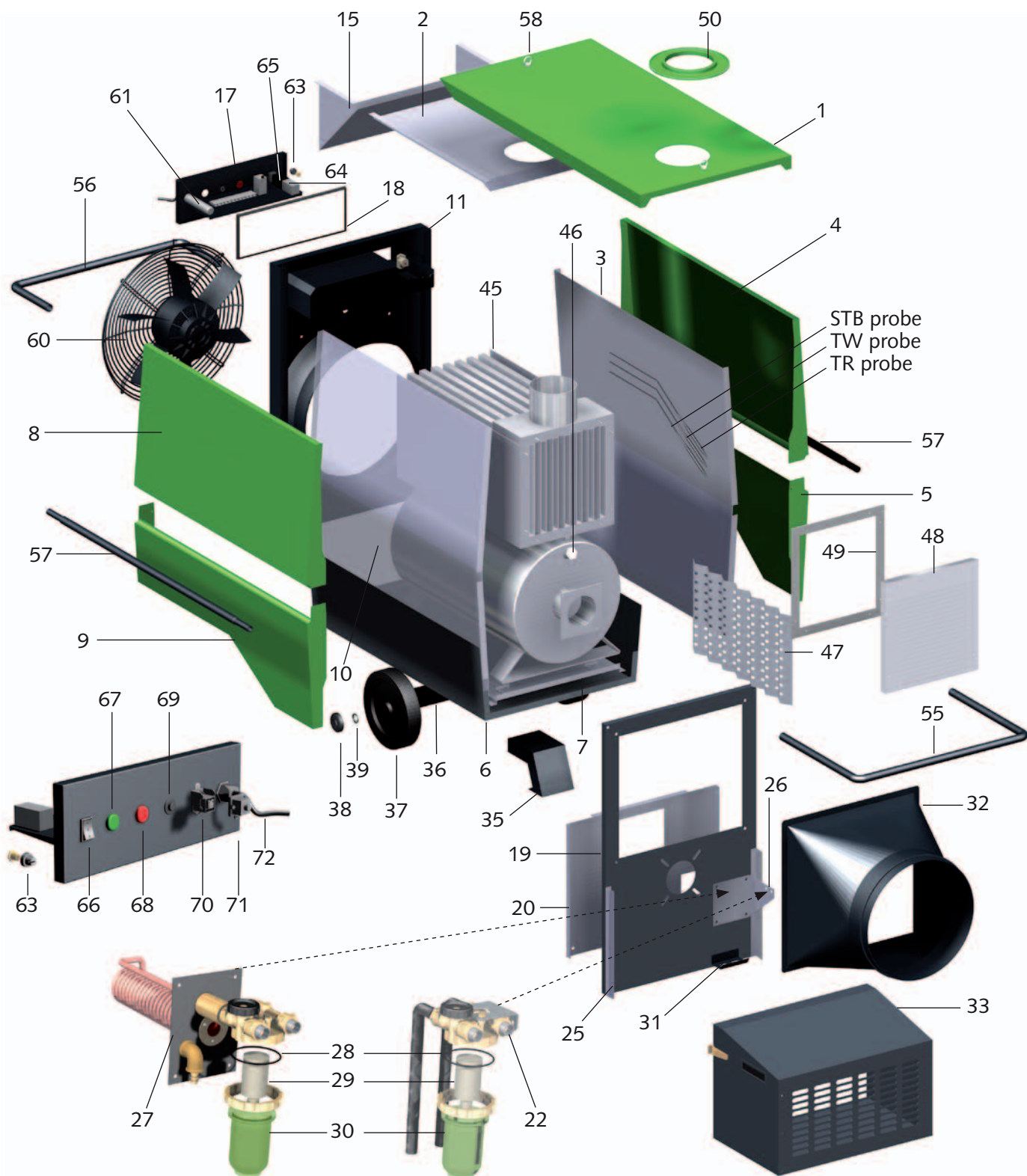


Fig. CLK 70

REMKO Multiflex oil preheating
Standard with CLK 120/150
with oil burner fitted ex works.
Available as option for all types.

REMKO oil filter,
standard up to CLK 70 with oil
burner fitted ex works.
Available as option for all types.

Spare parts list

No.	Designation	CLK 30	CLK 50	CLK 70	CLK 120	CLK 150
		EDP no.	EDP no.	EDP no.	EDP no.	EDP no.
1	Cover panel	1104703	1104703	1104740	1104770	1104770
2	Insulation, top	1104704	1104704	1104741	1104771	1104771
3	Insulation, right	1104705	1104705	1104742	1104772	1104772
4	Side panel, top right	1104706	1104706	1104743	1104773	1104773
5	Side panel, bottom right	1104707	1104707	1104744	1104774	1104774
6	Floor pan	1104708	1104708	1104745	1104775	1104775
7	Insulation, bottom	1104709	1104709	1104746	1104776	1104776
8	Side panel, top left	1104710	1104710	1104747	1104777	1104777
9	Side panel, bottom left	1104711	1104711	1104748	1104778	1104778
10	Insulation, left	1104712	1104712	1104749	1104779	1104779
11	Back panel, compl.	1104713	1104737	1104750	1104780	1104805
15	Insulation	1104714	1104714	1104751	1104781	1104781
17	Switching cabinet, compl.	1104716	1104753	1104783	1104807	1104808
18	Seal for switching cabinet	1104717	1104717	1104754	1104754	1104754
19	Front wall	1104718	1104718	1104755	1104785	1104785
20	Front wall insulation	1104719	1104719	1104756	1104786	1104786
22	Oil filter					
25	Guide bracket					
26	Holding bracket, oil filter					
27	Multiflex oil pre-heating, compl.	Dependent on the respective version of the unit				
28	O-ring					
29	Filter insert					
30	Oil filter cup					
31	Hose pass-through	1104722	1104722	1104722	1104722	1104722
32	Outlet nozzle	1104723	1104723	1104758	1104788	1104788
33	Burner housing	1104724	1104724	1104759	1104789	1104789
35	Support foot	1104725	1104725	1104725	1104790	1104790
36	Axle	1104726	1104726	1104760	1104791	1104791
37	Wheel	1101621	1101621	1101621	1108369	1108369
38	Hubcap	1101623	1101623	1101623	1101623	1101623
39	Locking ring	1101622	1101622	1101622	1101622	1101622
45	Combustion chamber, compl.	1104727	1104738	1104761	1104792	1104806
46	Sealing cap	—	—	1104728	1104784	1104784
47	Exhaust gas suppressor (set)	1104729	1104762	1104793	1104809	1104810
48	Inspection cover	1104730	1104730	1104763	1104794	1104794
49	Seal for inspection cover	1104731	1104731	1104764	1104795	1104795
50	Collar, exhaust gas nozzle	1104732	1104732	1104732	1104796	1104796
55	Transportation bracket, front	1104733	1104733	1104765	1104797	1104797
56	Transportation bracket, rear	1104734	1104734	1104766	1104798	1104798
57	Transportation bracket, middle	1104735	1104735	1104767	1104799	1104799
58	Crane eye	1102554	1102554	1102554	1102554	1102554
60	Fan, compl.	1108158	1108199	1108178	1104816	1104815
61	Condenser (fan)	1102516	1102716	1102817	1104802	1104802
63	Safety temperature limiter (STB)	1101197	1101197	1101197	1101197	1101197
64	Temperature controller (TR)	1103166	1103166	1103166	1103166	1103166
65	Temperature monitor (TW)	1103146	1103146	1103146	1103146	1103146
66	Operating switch	1101188	1101188	1101188	1101188	1101188
67	Indicator light, green (Operation)	1105514	1105514	1105514	1105514	1105514
68	Indicator light, red (Burner fault)	1105363	1105363	1105363	1105363	1105363
69	Reset button (Burner)	1103408	1103408	1103408	1103408	1103408
70	Thermostat socket	1101018	1101018	1101018	1101018	1101018
71	Strapping plug	1101019	1101019	1101019	1101019	1101019
72	Mains cable with plug	1104701	1104701	1104701	1104701	1104701
xx	Burner connector, 7-pin	1102537	1102537	1102537	1102537	1102537
xx	Drum fitting, compl.	1002544	1002544	1002544	1002544	1002544
xx	Cleaning brush, compl.	1103110	1103110	1103110	1103110	1103110

xx = not illustrated

When ordering spare parts, please state the EDP no., unit number and type (see name plate)!

REMKO CLK SERIES

Commissioning of forced-air oil burners

Preparatory tasks

⚠ CAUTION

The commissioning of the forced-air oil burner may only be carried out by trained specialists.

After loosening the 4 fastening bolts the mounting baseplate M is pulled off the housing G.

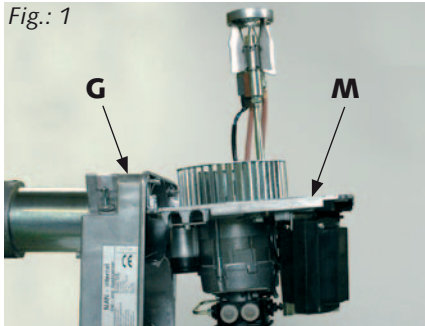
💡 NOTE

Because the air flap, up to size 44, is sprung this should be closed beforehand with the help of the adjustment screw [3] (turn adjusting screw approx. as far as scale value 1).

The most important functional parts for the installation/maintenance are now immediately accessible, as per the respective requirements.

From size SL 44, 6 fastening screws must be removed (note marking arrows).

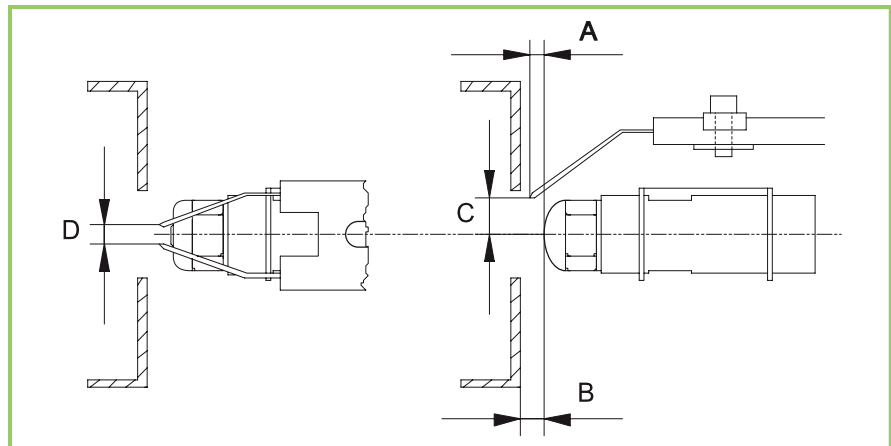
Fig.: 1



For maintenance work or for installing/replacing the oil nozzle, the mounting baseplate M can be positioned on the burner housing G in 2 ways (see figs. 1 and 2).

The baseplate can be positioned in the desired/possible position on the special mounting points in accordance with the unit-specific options.

Adjusting the ignition electrode and baffle plate



Size/dimensions	A	B	C	D
SLV 11 to SLV 33	5	5	7	3
SL 44 and SL 55	7	8	5	3

All sizes are approximate values and are in mm. The optimum setting must be adapted to the unit-specific and structural conditions.

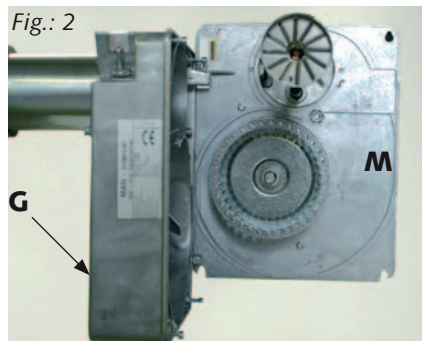
Required nozzle sizes

The selection of the required oil nozzle is dependent on the pump pressure and the unit capacity. Only a nozzle that is approved for the respective combustion chamber geometry with corresponding spray angle and cone characteristics may be used. Refer to the technical data for the required oil nozzle size.

⚠ CAUTION

The operating manual for the burner must be observed! Refer to the respective manual for setting values!

Fig.: 2



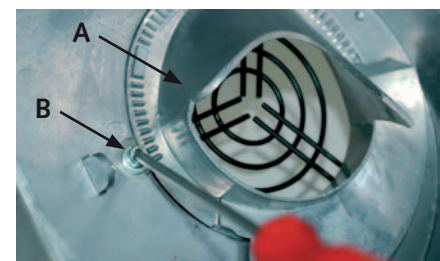
Air inlet nozzle

The required blower pressure can be adjusted with the adjustable air inlet nozzle A in accordance with the combustion chamber resistance and chimney draft, without having to change the output diameter.

1. Loosen the Allen screw B.
2. Turn the air inlet nozzle A to the desired position (note arrows!).

"min" = Smaller blower pressure

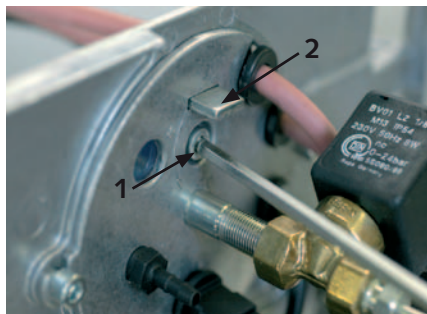
"max" = Larger blower pressure



Mounting baseplate

After having replaced the nozzle and carried out any adjustments required to the air inlet nozzle A, the mounting baseplate M is re-fitted in reverse order.

Adjusting the secondary air (Nozzle fitting adjustment)



Carry out the presetting of the secondary air as follows:

Set the nozzle fitting 2 to the desired value with the adjusting screw 1.

SLV 11 to SLV 33

Turning to left (–)
= smaller scale value
larger pressure behind the baffle plate
lower power range



Turning to the right (+)
= larger scale value
smaller pressure behind the baffle plate
upper power range

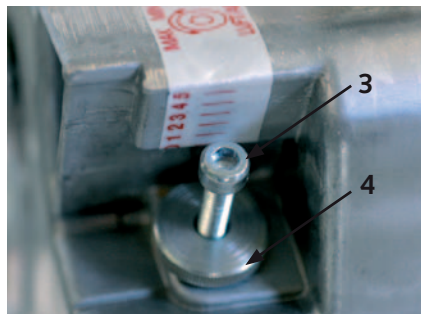
From SL 44 to SL 88

Turning to the left (+)
= larger scale value
smaller pressure behind the baffle plate
upper power range.



Turning to the right (–)
= smaller scale value
larger pressure behind the baffle plate
lower power range.

Air flap



The quantity of combustion air required is adjusted by means of the adjusting screw 3.
The air flap is set according to the unit capacity and the further burner settings.

Adjustment of the air flap

Adjust the air flap as follows:

1. Loosen the knurled nut 4.
2. Set the adjusting screw 3 accordingly.

Turn to the right = Less air

Turn to the left = More air

4. After having set the adjusting screw 3 lock it again with the knurled knob 4.

Additional notes

- If the flame should give off sooty smoke or break away with a fully opened air flap, reduce the pressure behind the baffle plate with the help of the secondary air setting
- It may also be necessary to open the air inlet nozzle further

Setting the pump pressure

The pump pressure should be adjusted, and checked if necessary, during burner commissioning and during all maintenance work.

NOTE

Never let the pump run for extended periods without any fuel. Never leave the units for extended periods with a pump that has run dry.

Adjust the pump pressure as follows:

1. Remove the stopper on the measurement nozzle "P".
2. Fit a suitable oil pressure manometer here.
3. Open all oil shut-off devices.
4. Switch on the burner.
5. Set the required oil pressure in accordance with the nozzle size and the unit capacity.
6. Switch off the burner after completing the adjustments.
7. Remove the oil pressure manometer again.
Re-fit stopper incl. seal.

CAUTION

If the burner should carry out a fault shut-down once again after the start phase, then another reset should be carried out after a waiting period of 5 minutes has passed.

Further reset procedures must be prohibited as there is a danger of deflagration.

REMKO CLK SERIES

Maintenance log



Unit type: Unit number:

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Unit cleaned - outside -																				
Unit cleaned - inside -																				
Fan blade cleaned																				
Combustion chamber cleaned																				
Heat exchanger cleaned																				
Exhaust gas suppressors replaced																				
Inspection cover seal replaced																				
Fuel filter insert replaced																				
Safety equipment checked																				
Safety devices checked																				
Unit checked for damage																				
Electrical safety check																				
Burner maintenance *)																				
Test run																				

Comments:

.....

.....

1. Date: Signature	2. Date: Signature	3. Date: Signature	4. Date: Signature	5. Date: Signature
6. Date: Signature	7. Date: Signature	8. Date: Signature	9. Date: Signature	10. Date: Signature
11. Date: Signature	12. Date: Signature	13. Date: Signature	14. Date: Signature	15. Date: Signature
16. Date: Signature	17. Date: Signature	18. Date: Signature	19. Date: Signature	20. Date: Signature

*) Have the forced-air burner maintained and adjusted only by authorised specialists and in accordance with the legal provisions (1st. BImSchV.). A corresponding measurement log should be generated.

Unit to be maintained only by authorised specialists in accordance with the statutory regulations.

Technical data

Unit type			CLK 30	CLK 50	CLK 70	CLK 120	CLK 150
Nominal heat load max.		kW	29	46	68	114	150
Nominal heat capacity	P_{nom}	kW	26.5	42	62	105	138
Minimum heat capacity	P_{min}	kW	N.A.	N.A.	N.A.	N.A.	N.A.
Room heating emissions		mg/kWh	121	122	N.A.	N.A.	N.A.
Nominal flow rate ¹⁾		m ³ /h	1,760	3,050	4,920	8,050	9,710
Temperature increase Δt		K	45	52	46	50	51
(Max. total) pressure		Pa	90	145	165	220	260
Fuel			EL heating oil, diesel fuel, biodiesel B7/B10 ²⁾ , biofuel HVO ³⁾ or LPG DE cat. I _{3B/P}				
Max. fuel consumption (heating oil)		l/h	2.85	4.5	6.6	11.2	14.8
Max. fuel consumption (liquid gas)		kg/h	2.3	3.6	5.3	8.9	11.7
Danfoss oil nozzle ²⁾		USG	0.6/60°S	1.00/60°S	1.35/60°S	2.25/80°S	2.75/80°S
Pump pressure, approx. ²⁾		bar	11.0	11.0	12.0	12.0	14.0
Liquid gas connection pressure		mbar	50	50	50	50	50
Auxiliary power consumption							
at nominal heating capacity	el_{max}	kW	0.370	0.420	0.860	1.800	1.900
at minimum heating capacity	el_{min}	kW	0.000	0.000	0.000	0.000	0.000
in Stand-By mode	el_{SB}	kW	0.000	0.000	0.000	0.000	0.000
Pilot flame power requirement	P_{pilot}	kW	N.A.	N.A.	N.A.	N.A.	N.A.
Thermal efficiency at nominal heating capacity	$\eta_{th,nom}$	%	92.8	92.2	92.9	91.3	91.4
Thermal efficiency at minimum heating capacity	$\eta_{th,min}$	%	N.A.	N.A.	N.A.	N.A.	N.A.
Type of room temperature control			Room temperature control with mechanical thermostat				
Exhaust gas flow, approx.		kg/h	48	75	115	180	235
Combustion chamber resistance (start up / operation)		Pa	145/40	150/45	180/80	400/90	480/120
Required flue draft		Pa	0	0	0	0	0
Power supply		V/Hz	230/1~/50				
Max. nominal current (complete unit)		A	1.8	2.0	4.0	8.2	8.8
Operating condenser (fan)		μF	3	5	14	30	30
Max. power consumption (oil preheating)		W	—	—	—	30	30
Electrical protection (provided by the customer)		A	10	10	10	16	16
Sound pressure level L_{pA} 1m		dB (A)	54	61	61	72	72

1) At Δt 45K/1.2 kg/m³)

2) Maximum biodiesel admixture (FAME) of 10%

3) Hydrogenated vegetable oils that satisfy the requirements of DIN EN 590

4) Based on the product-specific nozzle and pressure tolerances as well as the oil temperature, the specifications should only be considered guidelines.

We reserve the right to modify the dimensions and design as part of the ongoing technical development process.

REMKO CLK SERIES

Unit type			CLK 30	CLK 50	CLK 70	CLK 120	CLK 150
Air outlet Ø		mm	300	300	400	500	500
Flue gas connection ø		mm	150	150	150	200	200
Dimensions: Length		mm	1,450	1,450	1,610	2,100	2,100
Width		mm	660	660	730	920	920
Height		mm	1,000	1,000	1,120	1,350	1,350
Weight without blower oil burner		kg	112	118	158	275	291
Weight with forced-air oil burner		kg	126	132	172	296	312

Notes

16 horizontal green bars for taking notes.

REMKO CLK SERIES

REMKO QUALITY WITH SYSTEMS

Air-Conditioning | Heating | New Energies

REMKO GmbH & Co. KG
Klima- und Wärmetechnik

Im Seelenkamp 12
32791 Lage

Telephone +49 (0) 5232 606-0
Telefax +49 (0) 5232 606-260

E-mail info@remko.de
URL www.remko.de

Hotline within Germany
+49 (0) 5232 606-0

Hotline International
+49 (0) 5232 606-130

